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# DRAGUN CORPORATION

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January 2, 2007

Mr. Tim Renner  
Delphi  
Mail Code 8121  
2100 East Lincoln Road  
Kokomo, Indiana 46904

SUBJECT: Former Plant 5, Delphi Flint West  
Project #22117-14

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DELPHI

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LEGAL STAFF

Dear Mr. Renner:

This letter summarizes the current conditions at the **Delphi Flint West, Plant 5 Site** (the Site) located in Flint, Michigan. Figure 1 shows the Site location at 300 Chevrolet Avenue in Flint, Michigan (Section 13, Township 7N, Range 6E in Genesee County, Michigan). This letter also includes a summary of the environmental investigations conducted since 1995.

Previous Investigations and Site History: The following reports summarize the environmental information for the Site.

Blasland, Bouck & Lee, Inc. (BBL) 1995. Phase I Environmental Site Assessment, Building 5, Delphi-Flint West Facility. Report to General Motors Corporation Worldwide Facilities Group, Facilities Management/Remediation Team, Detroit, MI, dated November 1995

Blasland, Bouck & Lee, Inc. (BBL) 1997. Phase III Extent of Contamination Study, Former Building 5, Delphi-Flint West Facility, Flint, Michigan. Report to General Motors Corporation Worldwide Facilities Group, Environmental & Regulatory Support – Remediation, Detroit, MI, Volume 1 of 2, dated June 1997

Conestoga-Rovers & Associates (CRA) 2002. Revised Draft Interim Remedial Action Plan, Former Building 5, GM Delphi West Facility, Flint, Michigan. Report dated March 2002

The Dragun Corporation (Dragun) 2005. Summary of Site Conditions, Delphi Flint West, Plant 5. Report to Mr. Don Sokol, Delphi World Headquarters, dated October 12, 2005

USGS 1963. Water Resources of the Flint Area, Michigan. Geological Survey Water Supply Paper 1499-E by S.W. Wiitala, K.E. Vanlier and R.A. Kreiger

Blasland, Bouck & Lee, Inc. (BBL) conducted a Phase I Environmental Site Assessment at the Site in 1995. According to BBL (1995), the Site formerly contained a two story building that was first constructed in 1926. According to BBL (1995), operations at the Site included fabrication of valves, shafts, and cylinder cases between 1926 and 1995 and complete machining of rough castings between 1965 and 1984. As part of the fabrication process, mineral seal was delivered to hydraulic tanks on the floor from overhead pipes. Although no releases were reported, fluid was allowed to leak onto the concrete floor where it collected in sumps and trenches. Sumps were also used to collect wastewater, which was pumped to a treatment plant located on the west side of the property.

The building was demolished between July 24, 1995, and August 27, 1995. A concrete floor, subsurface floors and walls, and numerous pits and trenches remained after demolition. The southern half of the Site was regraded using clean sand fill and now slopes downward toward the Flint River. The northern half of the Site is generally flat and covered by concrete and other pavement that was part of the former building floor. Various sumps and trenches used in the plant were backfilled with concrete during 2003.

The Site also included a 2,000-gallon gasoline underground storage tank (UST) in the northeastern part of the property (Figure 2). This UST was removed during 1989. In addition, there were five above ground storage tanks (ASTs) located in the southeast corner of the Site. These included one 20,000-gallon 10W30 oil tank, two 5,000-gallon hydraulic oil tanks, one 15,000-gallon mineral oil tank, and one 20,000-gallon fuel oil tank. According to BBL (1995), there were no documented releases from the ASTs, nor were there any documented closures. The ASTs were removed between 1987 and 1992. There was no reported oil staining or pavement deterioration indicative of releases. Finally, there were two ASTs in the northwest part of the Site that were related to the wastewater treatment plant. These have been removed by General Motors.

According to BBL (1995), oil was first reported seeping into the Flint River during 1980. This seepage was reported by General Motors to the MDNR (now MDEQ) in 1980. BBL reported the oil consisted of 70% hydraulic oil and 30% mineral seal oil.

BBL (1995) reported that a gasoline UST located in the northeastern corner of the Site (Figure 2) was removed on June 9, 1989. After removal and inspection, the UST was reported to be in good condition with only minor rust. There was apparently some soil and groundwater impact as lead exceeded Michigan's Part 201 Generic Residential Direct Contact Criteria and naphthalene, di-n-butyl phthalate, and dissolved lead exceeded Part 201 Generic Groundwater/Surface Water Interface Criteria (Conestoga Rovers & Associates [CRA], 2002).

Between 1995 and 2002, consultants for General Motors/Delphi (BBL and CRA) advanced numerous soil borings and installed many monitoring wells at the Site to characterize the geology and determine the distribution of light non-aqueous phase liquid (LNAPL). Both BBL (1997) and CRA (2002) reported significant thicknesses of LNAPL in several wells. The various reports prepared by BBL and CRA are listed in the references. More recent investigations

indicate that large thickness of LNAPL in part of the Site reported by BBL and CRA was incorrect.

Current Conditions: The Dragun Corporation re-evaluated the work conducted by BBL and CRA (Dragun, 2005). The Dragun Corporation found that the thickness of LNAPL in the soil was much less than reported by both BBL and CRA. The Dragun Corporation's findings are discussed below.

The current hydrogeologic interpretation of the Site is based on soil information from 33 soil borings (that were not converted into monitoring wells) and soil and groundwater information from 27 monitoring wells (five of these monitoring wells have been either abandoned, buried, or accidentally destroyed). Figure 2 shows the locations of soil borings and monitoring wells at the Site.

Neither the BBL nor CRA reports of LNAPL thickness were consistent with the geological situation described by the USGS (1963). The USGS classified the natural soils on the south side of the Site as "moraine" deposits, which typically have low permeabilities. Since both BBL and CRA also characterized the soils as having low permeabilities and neither reported drilling through oil saturated soils in areas where they reported more than 10 feet of LNAPL, it was difficult to reconcile the reports of 15 feet of LNAPL in the monitoring wells screened in the low permeability soils. It was unclear from the BBL and CRA reports whether fractured clays or faulty wells could account for the large LNAPL thicknesses. Furthermore, The Dragun Corporation noted that several of the BBL/CRA wells were screened too deep to be capable of identifying LNAPL.

Since 2002, The Dragun Corporation investigated the soil and groundwater conditions at eight monitoring wells and one 4-inch diameter extraction well location to better define the Site hydrogeology and to better understand the distribution of LNAPL. At two locations where BBL and CRA reported substantial LNAPL thicknesses (MW-P5-36 and MW-P5-38), The Dragun Corporation closely examined the soil for visible LNAPL and installed monitoring well nests to determine where the LNAPL was entering the well (MW-P5-55S/D and MW-P5-56S/D).

The Dragun Corporation observed that the low permeability soils at MW-P5-55S/D and MW-P5-56S/D contained no visible LNAPL at depths where there should have been LNAPL based on the LNAPL thickness observed in the monitoring wells. Also, the low permeability soils were not dominated by fracture permeability.

Groundwater elevations were last determined on May 3, 2004. The High Permeability Area is unconfined and represents the water table while the Low Permeability Area is confined (Figure 2). The equipotential map indicates two main flow directions. First, the majority of the groundwater flow is essentially northward toward the river. Second, there is a groundwater low centered near MW-P5-1 (see Figure 2 for the location of this well). Although there are no data that specifically show this, The Dragun Corporation suspects this potentiometric low is due to groundwater leakage into the sanitary sewer or the material around the sanitary sewer, as it runs below the Flint River.

The groundwater elevations along the Flint River are at least ten feet higher than the typical Flint River elevation. This difference in groundwater versus river elevation suggests that the concrete enclosure of the Flint River restricts leakage of groundwater through the sides of the channel, therefore LNAPL discharge is minimal.

Areas of Interest: The Site consists of two permeability zones (see red line in Figure 2) that have distinctly different LNAPL distributions. The "Low Permeability Area" occupies the southern and northwest part of the Site. The natural soil beneath the Low Permeability Area is clayey moraine soil. The LNAPL that accumulates in the monitoring wells in this area is viscous and "clean-looking;" however, the thickness of LNAPL observed in monitoring wells in this area is inconsistent with the negligible amounts of LNAPL that were observed in the soil during drilling. The Dragun Corporation speculates that small amounts of LNAPL move into the wells through the well screen from the soil in this area and gradually displace the standing water in the monitoring well. Since the groundwater in this area is confined, the static water levels in the monitoring wells are far above the top of the well screens. Therefore, although there are several feet of oil in the monitoring wells in the Low Permeability Area, this does not represent the height of LNAPL in the soil. The LNAPL in the monitoring wells in the Low Permeability Area is the result of small amounts of oil that enter at the screen and float to the top of the standing water in the well that reflects the original groundwater head.

The "High Permeability Area" occupies the northern and eastern portions of the Site and coincides with the flat areas of the Site (Figure 2). In the High Permeability Zone near the Flint River, the clayey morainic soils were not encountered by soil borings that extended 20 feet below ground level. The natural and fill soils in this area are sandy to gravelly. The LNAPL in the High Permeability Area looks dirty and is much less viscous than that in the Low Permeability Zone. Furthermore, the thickness of LNAPL observed in the monitoring wells in this area is consistent with the thickness observed in the soil during drilling.

Figure 2 shows the distribution of LNAPL observed in monitoring wells on May 3, 2004. Figure 2 indicates that (1) LNAPL has been delineated to the east and west, (2) LNAPL is not present on the groundwater in all areas along the Flint River, (3) the absence of LNAPL along the Flint River in the northwest corner of the Site is consistent with the groundwater flow direction in the northwest, which is away from the river and appears to be influenced locally by the sanitary sewer, (4) LNAPL thicknesses in the High Permeability Area ranges from about one to five feet, and (5) no LNAPL thicknesses are provided for the Low Permeability Area monitoring wells because the thicknesses in the monitoring wells do not reflect that observed in the soils.

Testing of LNAPL Remediation Methods: The Dragun Corporation has conducted three remediation tests at the Site. These included (1) a 48-hour aquifer test/ pump and treat pilot test, (2) use of an oil-water interface seeking oil-only pump (Magnum Spill Buster), and (3) use of a solar-powered down-hole oil-water separator (GeoTech Solar Sipper). Only the pump and treat pilot test was successful in collecting large volumes of LNAPL. Over 500 gallons of LNAPL were recovered from the Site during the two-day test; however, a significant amount of wastewater required disposal following this test. A belt skimmer has been acquired for the Site and will be used for LNAPL recovery following installation of electrical power at the Site.

The Dragun Corporation removed LNAPL from selected monitoring wells in the Low Permeability Area and monitored LNAPL recovery on a monthly basis. These tests resulted in progressively lower levels of LNAPL in the wells suggesting a limited amount of LNAPL is available to the monitoring wells in the Low Permeability Area.

Summary: The Delphi Flint West, Plant 5 Site has two areas of interest. The Low Permeability Area occupies the southern and northwestern parts of the Site. This area is underlain by low permeability soils that are part of a moraine. Thicknesses of LNAPL observed in monitoring wells in this area do not reflect the LNAPL thickness in the soil. Little LNAPL was observed in the soil and where observed, appeared "clean" and viscous. The High Permeability Area occupies the northern and eastern portions of the Site. This area is underlain by permeable sands and sandy fill. Up to five feet of LNAPL have been observed in this area and this is consistent with observations in the soil borings.

Groundwater flow is generally toward the Flint River. A potentiometric low near the river appears to be related to a sanitary sewer main, which goes beneath the river near the west side of the Site. Although there is likely some groundwater discharge through pressure relief vents at the base of the Flint River channel, LNAPL discharge into the river or into the sanitary sewer is unlikely. There are three main reasons for this: (1) groundwater flow on the west side of the property is away from the river toward the groundwater low; (2) the water table is much higher than the river level, suggesting limited lateral hydraulic connection between the groundwater and the river; and (3) the LNAPL is floating above the groundwater, well above the level of the sewer. Finally, results from the aquifer test conducted at the Site indicate that Low Permeability and High Permeability areas are not well-connected hydraulically.

Since the Site geology, hydrogeology, and LNAPL distribution are well understood, no further remedial investigation is required at the Site. The remedial action at the Site will involve belt skimmers in the High Permeability Area. A belt skimmer has been acquired for the Site and will be used for LNAPL recovery beginning in early 2007. Additional belt skimmers will be installed as required. In addition, LNAPL will be removed from the Low Permeability Area by manual bailing as required.

If you have any questions regarding this report, please contact me at 248-932-0228.

Sincerely,

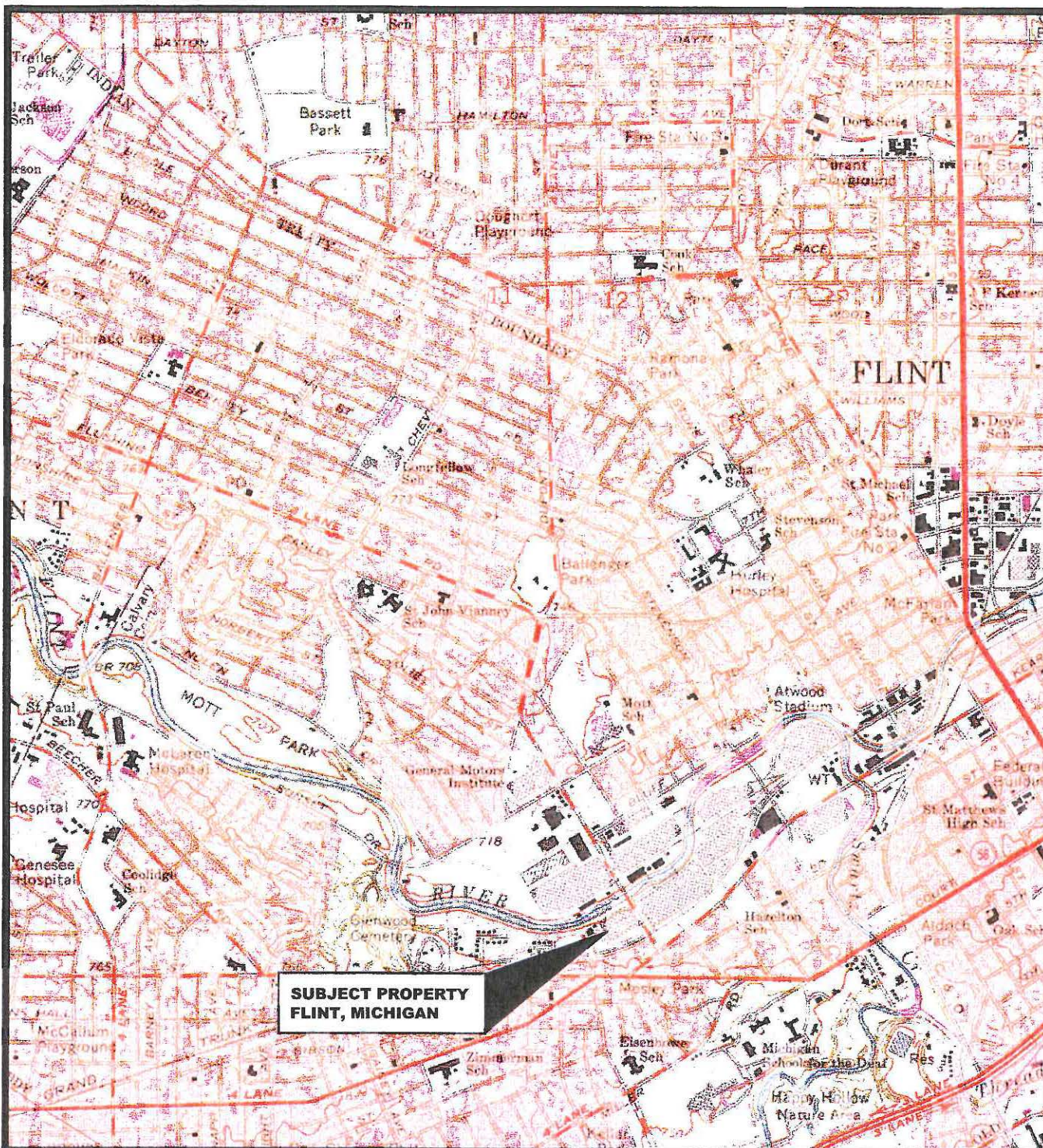
DRAGUN CORPORATION



Michael G. Sklash, Ph.D., P.Eng.  
Senior Hydrogeologist

MGS/lrm  
Attachment





SOURCE: FLINT NORTH, MICHIGAN QUADRANGLE (U.S. GEOLOGICAL SURVEY, 1975).



SCALE



0

2000 FEET



**FIGURE 1**  
**SITE LOCATION MAP**  
**FORMER DELPHI FLINT WEST, PLANT 5**  
**FLINT, MICHIGAN**



# LEGEND

- X— PERIMETER FENCE
- RETAINING WALL
- MW-P5-13 MONITORING WELL LOCATION (SURVEYED)
- ⊙ MW-P5-51 MONITORING WELL LOCATION (APPROXIMATE)
- ⊕ MW-P5-55 MONITORING WELL LOCATION (APPROXIMATE) (DRAGUN, 2003/2004)
- ⊕ PW-P5-5 PUMPING WELL LOCATION (APPROXIMATE) (DRAGUN, 2003)
- ⊕ SB-P5-23 SOIL BORING LOCATION (APPROXIMATE)
- ⊕ SB-P5-1 SOIL BORING LOCATION (APPROXIMATE) (DRAGUN, 2003)
- ▲ PW-P5-4 FORMER FREE PRODUCT RECOVERY WELL LOCATION
- HYDROSTRATIGRAPHIC BOUNDARY (APPROXIMATE) (REVISED MAY 2004)
- WELLS CONTAINING LNAPL (MAY 3, 2004)
- WELLS WITHOUT LNAPL (MAY 3, 2004)

NOTES: MW-P5-4, MW-P5-10, MW-P5-35, MW-P5-42, AND MW-P5-53 WERE BURIED, DESTROYED, ABANDONED, OR NOT LOCATED.

SCALE  
0 60 FEET

Reference: Urban Land Consultants, monitoring well survey of Delphi West Facility, dated 4/4/03; also approximate well and soil boring locations interpreted from BBL Investigation, dated 12/1995, from CRA Figure 1 New Boring Locations, dated 6/13/02, and from new Dragun installations.

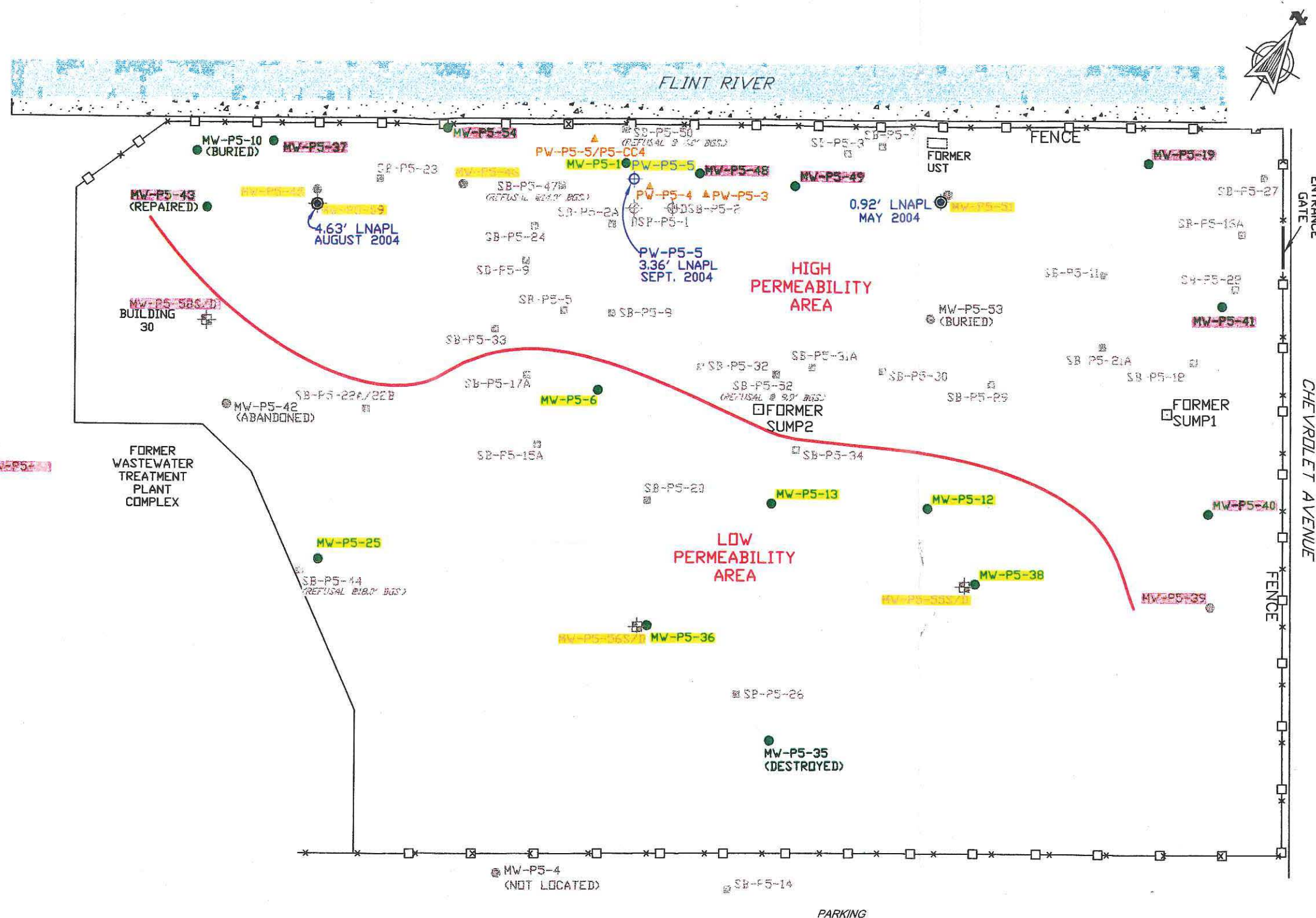


FIGURE 2  
DISTRIBUTION OF LNAPL, MAY 3, 2004  
FORMER DELPHI FLINT WEST, PLANT 5  
FLINT, MICHIGAN

The Dragun Corporation